

Improving supervision for students at a distance

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Improving supervision for students at a distance: videoconferencing for group meetings

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Every year, thousands of students go abroad for part of their study programme. Supervision from the home institution is then crucial for good study progress. Providing supervision and feedback at a distance is challenging. This project aims to identify bottlenecks for supervision and hypothesises that online supervisory group meetings with videoconferencing contribute to good supervision. Study 1 showed that students who were abroad perceived lower-quality supervision and feedback on all measured aspects, compared with students staying at the home institution. Within a quasi-experimental design, Study 2 showed that students participating in online meetings experienced better supervision than those who were abroad without online meetings, and they were equally positive about supervision as students who stayed at the home institution. These findings stress the need for extra support for students during their stay abroad and the large potential of videoconferencing in optimising supervision at a distance.

Keywords: higher education; internationalisation; student perceptions; satisfaction; distance education; supervision; interactive learning; videoconferencing

Introduction

In Europe, 213,266 students went abroad in an Erasmus programme in 2010 (EU Commission, 2011). Universities seek to provide support at a distance through online and blended learning (Hastie, Hung, Chen, & Kinshuk, 2010). This paper describes a project aiming to identify bottlenecks in undergraduate thesis supervision at a distance and diminish them by regular group meetings using videoconferencing software.

The final semester of the European Public Health bachelor programme at Maastricht University is dedicated to writing a bachelor thesis based upon research within real-life working environment. Students take part in thesis groups with peers who give each other feedback. For a period of four months, students choose to stay within the home university or go to a foreign institution. The project is carried out individually, under supervision of a university staff member (Todd, Bannister, & Clegg, 2004). Study 1 will

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investigate how the perceived quality of supervision differs for students who go abroad and those who stay at the home university. To overcome possible disadvantages of being at a distance, effects of organising online group meetings with videoconferencing will be evaluated in Study 2. Given the advantages of group discussions and collaborative learning (Yeh et al., 2008), online thesis group meetings are likely to be beneficial for the quality of undergraduate thesis supervision. It is hypothesised that students who are abroad experience better supervision and feedback when involved in online group meetings than when only using more common tools like email, phone and discussion boards. Ultimately, it is aimed to provide students who are abroad with the same quality of supervision as students who stay at the home university.

Despite the high learning potential of a stay abroad, it implies higher risks for study progress (Rienties, Beausaert, Grohnert, Niemantsverdriet, & Kommers, 2012). Students also have to deal with their thesis supervisor – who gives support and feedback – being at a distance. Often, they have a daily supervisor at their host institution, but the staff member at the home university stays responsible for supervision and guidance on the content, adhering to academic requirements, and grading the undergraduate thesis. Good supervision at a distance is essential for good progress of students' work, but it is more difficult to guarantee.

According to students, a good supervisor should be well-informed and interested in the project, available and easy to contact with questions or problems, provide comments and feedback on writing products, and ensure that the project and thesis are of good quality and size (Jamieson & Grey, 2006). It can be especially challenging to supervise undergraduate thesis groups when some or all students are located in different locations. Students abroad mostly have to rely on communicating with their supervisor by email or telephone, with lack of face-to-face conversations and thesis group meetings.

A risk of distance education is lack of interaction, causing isolation and disconnectedness, which negatively influences students' satisfaction (Bolliger, Supanakorn, & Boggs, 2010). Online learning is promising for supervision at a distance (de Beer & Mason, 2009). Software programmes for videoconferencing enable students and their supervisor to virtually meet on fixed time points in a virtual classroom. Blended learning, which is the combination of face-to-face learning (i.e. at the home university) and online learning (i.e. at a distance) is implemented to an ever-larger extent. A recent meta-analysis, however, has shown that (quasi-) experimental studies, comparing blended learning and face-to-face education, are still rare (only 47 studies between 2005 and 2013; Spanjers et al., 2014). As many of the effects are still not understood, there is a strong need to systematically investigate effects of educational innovations like online meetings.

Online group meetings are likely to solve many of the problems with undergraduate thesis supervision, which students might experience when being abroad. It enables real-time communication, which makes it easier to understand each other (Giesbers, Rienties, Gijssels, Segers, & Tempelaar, 2009; Hrastinski, Keller, & Carlsson, 2010). Interaction is considered as one of the most important factors in student satisfaction and quality of online education (Bolliger et al., 2010; Resta & Laferrière, 2007; Selim, 2007). Additionally, videoconferencing enables nonverbal communication via webcams and presenting visual information on a shared whiteboard (Giesbers et al., 2009).

We aim to answer the following questions:

- (1) Do perceptions of students who go abroad for their undergraduate thesis work, compared with students who stay at the home university, differ with respect to the following aspects of their supervision: feedback-seeking promotion, risk in feedback seeking, source availability, staff enthusiasm and support, and quality of feedback? (Study 1)
- (2) Can the perceived disadvantages for students who are abroad be resolved by online thesis group meetings with videoconferencing? (Study 2)
 - (a) Can the findings of Study 1 be replicated?
 - (b) What are the effects of using online thesis group meetings on perceived supervision?
 - (c) Are there still differences in perceived supervision between students abroad having online thesis group meetings and students who stay at the home university?

General method

Overlapping aspects of both studies will be described first. Thereafter, Study 1 and Study 2 will be described in detail. Studies were conducted in two subsequent years, using two different cohorts of students.

Materials

Learning environment

Before the actual start of their stay abroad, undergraduate students prepare a research proposal and discuss it several times in face-to-face meetings with their thesis group, consisting of five to seven students and supervised by a staff member from the home university. Students are used to work in groups as they are studying in a problem-based learning curriculum. The supervisor guides the group process and gives feedback on students' work. Also during the stay abroad, the supervisor provides feedback, ensures that academic requirements are met, and monitors students' progress until the thesis is finalised. Students are expected to regularly discuss their work and progress in their thesis group and with their supervisor.

Placement Evaluation Questionnaire (PEQ)

This questionnaire measures students' perceptions of the supervision and feedback by the supervisor during the stay abroad. The PEQ is based on relevant items of subscales of existing, validated questionnaires that operationalise different aspects of good thesis supervision. Despite the complexities and contentiousness of debates of what good supervision looks like, we attempted to identify a series of characteristics, which we attribute to good supervision. The PEQ consists of 32 items, covering eight scales: (1) *Feedback-seeking promotion* (Steelman, Levy, & Snell, 2004) about the extent to which the supervisor is supportive of feedback-seeking behaviours of students and stimulates them to ask for feedback (4 items, $\alpha = .86$); (2) *Risk in feedback seeking* (Ashford, 1986) about feedback-seeker's risk of embarrassment and loss of face (5 items; $\alpha = .84$); (3) *Source availability* (Steelman et al., 2004) about

the perceived amount of contact with the supervisor and the ease with which feedback can be obtained (3 items; $\alpha = .88$); (4) *Staff enthusiasm and support* (ETL Project, 2002) about the supervisor's enthusiasm about the subject and patience in explaining difficult concepts (2 items; $\alpha = .80$).

Three scales measure student perceptions of the quality of feedback (Lizzio & Wilson, 2008): (5) *Developmental* dimension about the supportive function of feedback in the learning process (7 items; $\alpha = .88$); (6) *Encouragement* about the extent to which the feedback enhances student motivation (4 items; $\alpha = .82$); and (7) *Fairness* about clarity, legibility and consistency of feedback (3 items; $\alpha = .69$).

The scale *Satisfaction* (8) questions students' satisfaction with the role of the supervisor and the quality of the thesis group meetings (TALQ; Frick, Chadha, Watson, & Zlatkovska, 2010; 3 items, $\alpha = .66$). This scale is only included in Study 2, as it became interesting to measure satisfaction as another relevant variable for evaluating the undergraduate thesis programme. Satisfaction is closely related to motivation for learning (Könings, Brand-Gruwel, & van Merriënboer, 2011) and the likelihood of finishing the thesis (Ives & Rowley, 2005).

Scales 4–8 are originally designed for use with undergraduate university students. Reliability and validity studies have shown satisfying results (see references above). Scales 1–3 have also shown good reliability and validity, but are originally developed for graduates. The internal consistency of all scales in our studies is satisfactory (see reported α 's above).

Items are rated on a five-point scale, ranging from strongly disagree (1) to strongly agree (5). Some items are reformulated to better fit our specific educational context.

Placement Evaluation Questionnaire-Supervisor version (PEQ-S)

To identify effects of possible differences between supervisors, a parallel version of five subscales of the PEQ is developed for supervisors. It consists of 17 items of the scales: Feedback-seeking promotion, risk in feedback seeking, source availability, staff enthusiasm and satisfaction.

Procedure

After returning from their stay abroad, students filled out the PEQ by clicking a link to the online instrument. After one week, a reminder was sent. Supervisors also received an invitation, accompanied by a link to the PEQ-S.

Study 1

Method

Participants

The participants were 34 university students (third year of bachelor programme) and their supervisors ($N = 5$); 24 students went for a stay abroad and 10 students stayed at the home university. Students were organised in five thesis groups of which three thesis groups contained both home students and abroad students, and two thesis groups only contained abroad students.

Data analysis

Unpaired-samples *t* tests were conducted to test whether PEQ scores differed between students who went abroad and those who stayed at the home university. To indicate effect sizes, Cohen's *d* is reported.

Results

Table 1 presents the descriptive statistics of the PEQ for all students, and separately for students who went abroad (from now on called 'abroad students') and those who stayed at the home university ('home students'). The comparison between both groups showed differences on all scales. Abroad students perceived their supervisor as much less promoting feedback-seeking behaviour than home students, $t(32) = 3.03$, $p < .01$, $d = 1.14$. The risk in seeking feedback from the supervisor was much higher for abroad students than for home students, $t(32) = 2.11$, $p < .05$, $d = .77$. The perceived amount of contact with the supervisor and the ease with which feedback can be obtained ('source availability') is rated much lower by abroad students than home students, $t(31) = 2.50$, $p < .05$, $d = .99$. Staff enthusiasm is perceived much lower by abroad students than home students, $t(32) = 4.26$, $p < .05$, $d = 1.77$. All effect sizes are large.

Provided feedback is experienced as less fair by abroad students than home students, $t(30) = 2.22$, $p < .05$, $d = .88$. A trend was found that abroad students perceived feedback as less supportive in the learning process ('development'), $t(30) = 1.69$, $p \leq .10$, $d = .61$, and less encouraging, $t(29) = 1.96$, $p < .10$, $d = .73$, than home students.

Results of supervisors who had a thesis group consisting of abroad students only did not differ from results of supervisors of mixed groups (i.e. abroad and home students; $p > .10$ for all *t* tests).

Discussion

Students who went abroad experienced more problems in the supervision process: they felt less stimulated, had more hesitations in asking for feedback, and were less satisfied with the feedback.

Perceived lower quality of supervision for abroad students might be due to lower affordances of communication tools at a distance. Contact with the supervisor might

Table 1. Means and standard deviations for all students and separately for abroad students and home students.

	All (<i>n</i> = 34)		Abroad (<i>n</i> = 24)		Home (<i>n</i> = 10)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Feedback seeking promotion	3.49	.98	3.19	.88	4.20	.89
Risk in feedback seeking	2.13	.80	2.31	.72	1.70	.86
Source availability	3.33	1.19	3.01	1.16	4.06	.96
Staff enthusiasm and support	3.48	1.06	3.06	.94	4.45	.59
Feedback – development	3.79	.65	3.66	.56	4.07	.77
Feedback – encouragement	3.86	.54	3.73	.47	4.13	.61
Feedback – fairness	3.37	.77	3.18	.76	3.80	.65

have been less frequent and intense, causing isolation (e.g. Yeh et al., 2008). Communication might have taken place asynchronously, leading to possible problems in understanding each other (Giesbers et al., 2009). Additionally, abroad students did not participate in actual thesis group meetings, thereby decreasing possibilities for discussions, which have been found to be important for engagement, satisfaction, and quality of learning (Bolliger et al., 2010; Oncu & Cakir, 2011; Resta & Laferrière, 2007; Selim, 2007).

Study 2

An intervention was introduced to abroad students: online thesis group meetings were organised using videoconferencing software. In a quasi-experimental design, half of the abroad students participated in online group meetings (experimental condition), while for the other half of the abroad students no intervention was implemented (control condition; identical to Study 1). Study 2 will investigate the effects of online group meetings on perceived quality of supervision.

Method

Participants

The 49 undergraduate students were divided into eight thesis groups, each supervised by a different staff member of the home university. In the experimental condition, 19 students (15 abroad, 4 home) and three supervisors took part in online thesis group meetings. These supervisors voluntarily decided to participate in this experiment. Students were assigned to supervisors based on the match between the thesis topic and the supervisor's research interests. In the control condition, the sample consisted of 30 students (20 abroad, 10 home) and five supervisors. Of the three experimental groups with online thesis group meetings, two groups were mixed with home and abroad students and one group had only abroad students; of the five control groups, two groups were mixed and three groups had only abroad students.

Materials and procedure

Online thesis group meetings took place with a web-based videoconferencing programme at a time interval of 2–3 weeks. Communication tools are included for teleconferencing, chat, emoticons, webcams and a shared interactive whiteboard. Students and supervisors were instructed to use the whiteboard for presenting and discussing the progress of individual students, based on presentations prepared beforehand. The home students regularly met during face-to-face thesis group meetings, while in the abroad control group students and supervisors were also expected to regularly discuss the work and the progress. Explicit instruction about organising regular supervision contact was given to all participants.

Data analysis

ANOVAs were conducted to compare three conditions: Experimental-abroad ($N = 15$), control-abroad ($N = 20$) and control-home university ($N = 10$). Four students participated in the experimental group while being at the home university; they

were excluded from the analyses because this group is irrelevant for the research questions. Post hoc analyses with Bonferroni correction were used to investigate differences on PEQ scale means between:

- (1) controls-abroad and controls at the home university, which is a replication of Study 1 (research question 2a);
- (2) experimental-abroad students and control-abroad students, testing the hypothesised beneficial effects of online thesis group meetings over traditional methods to maintain communication while located in different places (research question 2b); and
- (3) experimental-abroad students and controls at the home university, showing whether the found negative effects of being abroad on the feedback-related variables can be resolved by online thesis group meetings (research question 2c).

Results

Table 2 presents descriptive statistics of the PEQ scores for the entire sample of students as well as per condition.

Control-abroad versus control-home

Descriptive statistics of abroad students and home students are presented in Table 2 (Columns 3–6). Findings of Study 1 were replicated: abroad students felt much less promoted to seek feedback than home students ($F = 6.82$, $p < .01$, $\Delta = .96$, $SD = .32$, $p = .01$, $d = 1.15$). They experienced a much higher risk to ask for feedback than controls at the home institution ($F = 4.60$, $p < .05$, $\Delta = .59$, $SD = .23$, $p < .05$, $d = 1.03$). Source availability was perceived to be much lower for abroad students ($F = 8.55$, $p < .01$, $\Delta = 1.22$, $SD = .35$, $p < .01$, $d = 1.33$) and they perceived much less staff enthusiasm ($F = 8.26$, $p < .01$, $\Delta = 1.30$, $SD = .34$, $p < .01$, $d = 1.48$) than home students. All effect sizes are large.

For abroad students, feedback was much less helpful for their development ($F = 6.41$, $p < .01$, $\Delta = .84$, $SD = .26$, $p < .01$, $d = 1.18$) and less encouraging

Table 2. Means and standard deviations for all students and separately per condition.

	All students ($n = 49$)		Control- home ($n = 10$)		Control- abroad ($n = 20$)		Experimental- abroad ($n = 15$)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Feedback seeking promotion	4.04	.90	4.48	.40	3.51	1.12	4.38	.48
Risk in feedback seeking	1.86	.62	1.58	.32	2.17	.74	1.68	.47
Source availability	3.92	1.01	4.47	.57	3.25	1.17	4.27	.55
Staff enthusiasm and support	4.15	.99	4.85	.24	3.55	1.22	4.40	.54
Feedback – development	3.83	.73	4.26	.30	3.41	.97	4.02	.18
Feedback – encouragement	3.82	.86	4.25	.42	3.44	1.17	3.97	.43
Feedback – fairness	3.69	.85	3.97	.51	3.55	1.06	3.58	.78
Satisfaction	3.51	.78	4.00	.54	3.22	.72	3.47	.91

($F = 3.54$, $p < .05$, $\Delta = .81$, $SD = .33$, $p = .05$, $d = .92$) than for peers who stayed at the home university. There was no significant effect on fairness of feedback.

Results on six of seven scales mirror the findings of Study 1, underlining the substantial disadvantages for students who are geographically dispersed. The eighth scale measuring satisfaction that was added in Study 2 yielded another significant result: satisfaction was much lower for abroad students ($F = 3.58$, $p < .05$, $\Delta = .78$, $SD = .29$, $p = .05$, $d = 1.23$) than for home students.

Experimental-abroad versus control-abroad

Table 2 also presents the descriptives of the abroad students, separately for the experimental condition (columns 7–8) and the control condition (columns 3–4). Post hoc analyses showed large differences between the groups (Figure 1). Students involved in online group meetings felt much more promoted to seek feedback than the controls ($F = 6.82$, $p < .01$, $\Delta = .87$, $SD = .28$, $p = .01$, $d = 1.01$). There was a trend that they perceived less risk to ask for feedback than controls ($F = 4.60$, $p < .05$, $\Delta = .49$, $SD = .20$, $p = .057$, $d = .79$). Source availability ($F = 8.55$, $p < .01$, $\Delta = 1.02$, $SD = .30$, $p < .01$, $d = 1.12$) and staff enthusiasm ($F = 8.26$, $p < .01$, $\Delta = .85$, $SD = .30$, $p < .01$, $d = .90$) were rated much higher by students in the experimental condition than by controls. All effect sizes are large. No significant differences were found on quality of feedback and satisfaction.

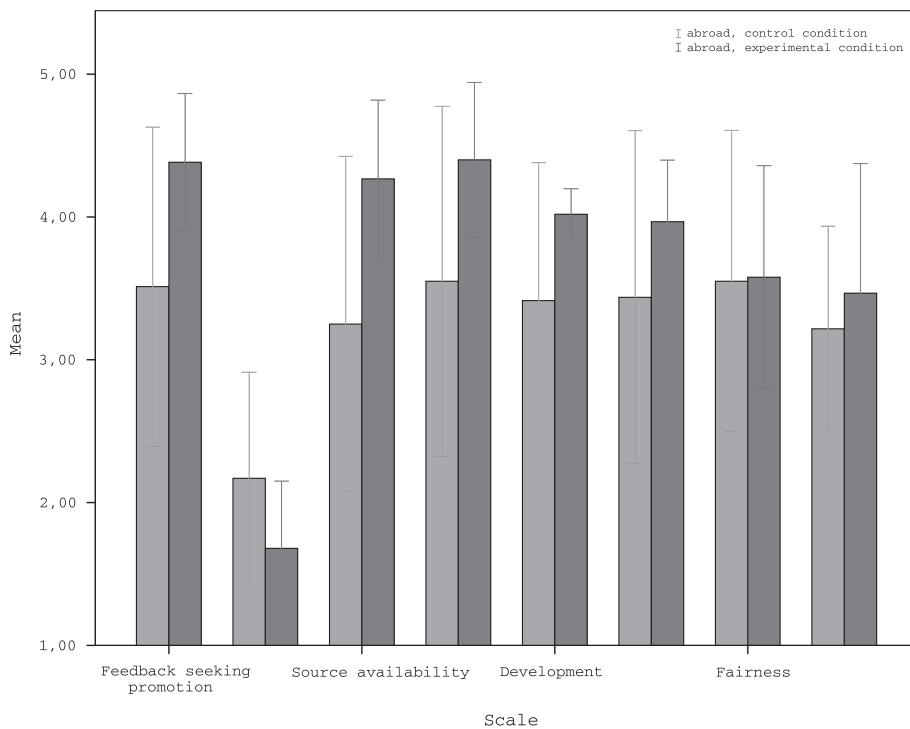


Figure 1. Mean scores and standard deviations of the PEQ scales of control-abroad students and experimental-abroad condition.

Experimental-abroad versus control-home

Descriptives for experimental-abroad students and control-home students are presented, respectively, in columns 7–8 and 3–4 of Table 2. Post hoc analyses did not show any significant differences between these two conditions (all $p > .10$): no negative effects were found for abroad students, as compared with those who stayed at the home university. On none of the scales of the PEQ-S differences were found between supervisors in the experimental and control conditions ($p > .10$ for all t tests).

Discussion

This study replicated the findings of Study 1 and stresses the need for extra support for students who go abroad. Regularly scheduled online thesis group meetings showed strong beneficial effects, as students experienced the supervisor's support as much more available and supportive, and asking for feedback as less risky, compared with abroad students who did not participate in group meetings. Abroad students do not perceive detrimental effects on quality of supervision when participating in online group meetings and are as positive about supervision as those who stayed at the home university. These results underline the earlier reported importance of synchronous communication (Hrastinski et al., 2010) and group meetings for learning (Bolliger et al., 2010; Oncu & Cakir, 2011).

General discussion

These two studies focused on the perceived quality of supervision for students who went abroad for their undergraduate thesis work, as compared with students who stayed at the home university. Study 1 has shown that students who went abroad perceive lower quality of supervision and feedback. In Study 2, online thesis group meetings were introduced and this considerably improved the perceived quality of supervision on all aspects. There is no longer any difference in the perceived quality of the supervision process between students who went abroad and those who stayed at the home institution. This indicates that disadvantages from being at a distance can be fully compensated by regularly planned online thesis group meetings.

The found detrimental effects of being abroad on quality of supervision and feedback are in line with earlier research (Hrastinski et al., 2010): in asynchronous communication, there is less social support and exchange, which is essential for good supervision. Synchronous communication, like videoconferencing, positively influences participation in discussion and enables a higher degree of support. Immediate feedback, negotiating and monitoring of reactions to feedback increase commitment and motivation. The results of our studies might be due to the fact that abroad students typically had to rely more on asynchronous communication, while home students communicated more face-to-face (synchronous). This difference is diminished by introducing online thesis group meetings.

Critical success factors for online-learning include characteristics of the supervisor, like attitudes towards interactive learning and online learning, and teaching style (Selim, 2007). This might have influenced our results, but the fact that results of Study 1 have been replicated in Study 2 with different students and supervisors indicates that effects of differences between supervisors are limited.

A limitation of our study is that students were not randomly assigned to conditions: they decided themselves to go abroad or not. Differences in student characteristics might have influenced results, but it is reasonable that experienced supervision requirements are comparable, as thesis requirements are the same for all students. Another limitation concerns the assignment of students to the experimental or control condition (Study 2). Abroad students are non-selectively assigned to conditions, but based on the supervisor they were grouped with. This might have caused some bias because of the selection of supervisors who were willing to participate in this project. This bias was unavoidable as for educational innovations you depend on staff members who are motivated to leave routine procedures and try something new (Fullan, 2007; Könings, Brand-Gruwel, & van Merriënboer, 2007).

The current studies have two main practical implications. Staff members in undergraduate curricula, which allow students to go abroad for writing a thesis upon research within the real-life working environment, should be aware that supervision of these students is more difficult and is likely to be of less quality if no special measures are taken. Supervisors can be stimulated to organise online group meetings with videoconferencing software. This might contribute to providing an effective feedback environment to students.

Theoretically, the studies have provided further support for earlier research showing the importance of interaction (Bolliger et al., 2010), synchronous communication (Giesbers et al., 2009; Hrastinski et al., 2010), and group work (e.g. Yeh et al., 2008) for learning. Our first study shows negative effects of lack of these elements on perceived quality of supervision, while the second study demonstrates benefits of them when present in online group meetings. Furthermore, the studies are in alignment with the priorities of research in online learning environments (Oncu & Cakir, 2011): enhancing student engagement and collaboration by interaction and discussions in online environments. The current studies established the importance of online interaction on perceived quality of education.

To conclude, the current studies have shown that quality of supervision is likely to suffer when students are abroad for their undergraduate thesis work. The findings stress the need for extra support of students during their stay abroad. Online thesis group meetings with videoconferencing help to overcome disadvantages of being in different locations and have a large potential in optimising supervision at a distance.

Notes on contributors

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